

NSTAR Arlington Reliability Enhancement Project Status Report as of: June 28th, 2004

The Four-Phase NSTAR Arlington Reliability Enhancement Project is well under way toward establishing a state-of-the-art electric distribution system in the Town of Arlington. This plan was presented to the Arlington Board of Selectmen on August 12th, 2002, and timely updates on our progress were provided on March 20th, 2003, September 29th, 2003 and today, June 28th, 2004. Phase One is substantially complete (80%), and phase two is almost complete (90%). Arlington residents and businesses have already benefited from the electric distribution infrastructure improvements that have been implemented since the summer of 2002. Electrical system reliability, as measured in both frequency and duration of electrical outages, has improved as expected in the completed areas.

Ms. Kathy Kelly, an independent utility evaluator from Shaw - Stone & Webster Management Consultants, Inc., was retained by Arlington to evaluate this NSTAR project. Her findings reaffirmed NSTAR's stated commitment to improve the electric infrastructure in Arlington, however she did raise a question last fall concerning an apparent marked increase in Outage Incidence (2003 = 87) over the previous years (2000 = 33; 2001 = 65; 2002 = 63). After careful review of the outage data, the explanation for this apparent increase in outage incidences is explained by the improvement in NSTAR's data collection types and categories of outages – we are simply tracking and recording more outage information than previously. Our engineering group adjusted the 2003 figure of 87 Outage Incidents to a comparable 48 Outage Incidents, using the same data collection standard as for the previous years.

The following table illustrates these reliability improvements with Outage Data specific to Arlington Circuits:

	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004 (thru 6/25)</u>
Customer Hours Out (COH)	41,893	76,723	39,505	15,056	5,472
Outage Index (in Minutes)	121.5	222.4	114.5	43.7	15.8
System Incidents (*)	33	65	63	87(*)	39(*)
Adjusted System Incidents (*)	33	65	63	48(*)	20(*)

(*) Note that System Incidents for 2003 reflected an increase due to the improvement of outage data tracking by NSTAR. The 2003 incidences included many additional types of incidences not previously reflected in the earlier outage history, i.e. failures of individual house services, outages on the secondary system, single transformer outages, etc. After adjusting the 2003 System Outage Incidences to reflect like outages from the previous years, the 87 Incidents would adjust to 48 Incidents.

Additional engineering analysis resulted in an expansion of the scope of work for the Project, which required the reconductoring and upgrading of an additional underground circuit (250-H6) from Everett to Arlington to improve capacity and reliability. This additional work was completed May 15, 2003, and has impacted the schedule of the Project. Added work is being engineered to replace 20,000 feet of underground conductors for circuit 211-H14 to serve southeast Arlington that will be implemented in Phase Three. Additionally, issues encountered in

the implementation of the crossarm installations in the Morningside area necessitated the construction of pole crossarms to provide proper circuit spacing. This new additional work postponed some work outlined for Phase Two a few months. Timely installation of new taller poles has been a barrier to completion of the various Phases of this project, which has created a significant demand on the limited pole-setting resources of Verizon to keep up with the conversion schedule. The added scope of work, the redesign work and pole-set requirements have resulted in delays in aspects of the Project (Please reference the Revised Schedule below).

In addition to in-house crews, NSTAR has contracted with outside contractors to expedite progress. NSTAR is committed to making Arlington's Electric Distribution System the model that all other Massachusetts communities will aspire to replicate. At completion of this Project, Arlington will be served by seven 13.8 kV circuits, with sectionalizing capability, constructed to the latest industry standards. Generally, each pole will carry only one circuit and the infrastructure, including poles, crossarms, guys, transformers, switches, primary and secondary conductor wiring, will be of newer construction, which will result in marked improvement in reliability.

General Progress Report:

Cooperation from Arlington Town officials and workers has been instrumental in achieving the progress made to date. Arboriculturally correct tree pruning for the Project is on schedule and has been achieved with the cooperation from both residents and Town officials. NSTAR's Vegetation Management group is currently reviewing Arlington outage data to identify which areas, if any, might benefit from additional tree pruning. Police details have been cooperative and valuable in assisting crews throughout the construction process.

Verizon has completed installation of the required taller poles for Phase Two system upgrades. They continue to be an important partner in achieving the Project progress to date. Verizon deserves special recognition for their significant efforts and resource commitment, which has allowed the Project to near completion of Phase Two. Verizon continues to work on the installation of the necessary taller poles to allow the NSTAR Electric infrastructure improvements to advance.

In Phase One, the four existing 13.8 kV circuits in Arlington that are generally located in mid-Arlington, have all been upgraded to address the immediate reliability issues and are now being re-engineered to upgrade to the current 13.8 kV construction standards.

In Phase Two, a new 13.8 kV overhead & underground distribution circuit (211-H3), originating in Woburn and traversing Winchester, now feeds the Morningside section. New taller poles, guys, cross-arms and primary conductor wiring have been installed on the Backbone and Taps in the Morningside area, and upgrades to the side streets are near completion. All side taps off the Backbone have been fused to limit the impact of any potential future power outage. Significant additional transformer capacity has been added. Installation of lightning protecting ground rods to protect both the circuit and equipment are proceeding on schedule. Installations of auto-sectionalizing units, which enable automated electric load transfers, are on schedule. This system enhancement will reduce long-term outages.

In Phase Three, NSTAR has developed a comprehensive pole-by-pole installation schedule to precisely locate and sequence all the necessary taller poles that Verizon will be setting. These taller poles are required to be set prior to any Phase Three circuit conversions. The considerable resources necessary to set the required 320 taller poles in the East Arlington section have delayed progress on this phase. The priority sequencing of specific poles at precise locations will allow

NSTAR to construct the new 13.8 kV circuits in an expedited manner without any significant power interruptions to our NSTAR electric customers. Nearly all of the new poles must be set in place before the Phase Three 13.8 kV circuits can be installed. Verizon has recently advised us that the required Phase Three pole sets are approximately 45% complete (150 of 330 poles) and Phase Three pole installations will be completed by September 30th, 2004.

In Phase Four, NSTAR will extend a new circuit from Lexington into West Arlington.

Revised Schedule

Phase One

- (New work added to Project). Reconductoring and upgrading of an additional underground circuit (250H6), which extends from Everett to Arlington's Mystic Substation. Completed May 15th, 2003.
- Upgrading all existing 13.8 kV infrastructure in Arlington to the current 13.8 kV construction standards. Two of the four (211-H14 & 59-1393H1) 13.8 kV circuit have been completed, and the remaining two circuits (211-H11 & 351-1385H1) are scheduled to undergo special circuit upgrades (added scope) to replace connectors, selected additional tree pruning (as indicated) and add additional animal protection and lightning arrestors. All of the existing 13.8 kV circuits are projected to be completed September 1st, 2004.

Phase Two

- Convert five 4kV circuits (part of 211-07 and 380-02), 59-02, 59-06, 380-05, to 13.8 kV distribution. Three 4kV circuits have been converted to 13.8 kV and the remaining two 4kV circuit conversions are approximately 80% complete. The remaining sections of two 4kV circuits will be converted to 13.8 kV by the week of July 19th, 2004.

Phase Three

- (New work added to Project): Replacement of 20,000 feet of underground conductors for circuit 211-H14 to serve southeast Arlington will be complete by December 31, 2004.
- Installing 13.8 kV distribution circuit 211-H9 in southeastern section of Arlington. This is projected to be completed December 31st, 2004, provided poles are set on schedule and weather permitting.
- Convert five 4 kV circuits to 13.8 kV: 59-03, 59-05, 59-07, 59-08 & 380-03. This projected is to be completed by December 31st, 2004, provided poles are set on schedule and weather permitting.

Phase Four

- Extend new circuit from Lexington to convert western section of Arlington, including 4 kV step-down areas of 351-1385H1 and 211H14. Design and engineering is in progress. Additional 4 kV circuits include 59-01, 351-04, 351-05 and 351-06 will also be converted. Provided the poles are set by May 1st, 2005 (not confirmed by Verizon, as yet) and weather permitting, the 13.8 kV circuit conversions will be completed by September 1st, 2005.

Town of Arlington/NSTAR working Items:

The need for proper guying of the taller 45' poles continues to be an issue that NSTAR has identified as a potential barrier to completion of the Project. Wherever possible, NSTAR will mitigate the need for guys, or support posts and/or guy wires, however certain pole locations absolutely require guys for stability and safety. Generally, wherever a line of poles turns a corner or terminates a line, a guy post and/or guy wire system is necessary to offset or balance the tension of the wires or load on the pole. We respectfully request that residents and town officials work with us to properly locate guys.

We wish to express our appreciation to town residents and officials for their support and cooperation to date. We acknowledge and greatly appreciate the significant and essential role that Verizon has played in working with NSTAR to set a record number of required taller poles in Arlington, without which this project could not proceed. We continue to work with Verizon to accomplish the necessary pole sets in Phases Three (320 poles) and Four (500 poles) and appreciate their ongoing commitment to the Project.

Our significant progress toward installation of infrastructure improvements in Arlington have exacerbated the double-pole count in the Town and we respectfully request that the community bear with us as we push to complete the Reliability Enhancement Project. We do not want to divert critical resources to double poles until we have completed the reliability portion of the project. We will then address the double poles as the last action of the Project.

We wish to thank everyone for their patience and understanding while NSTAR completes these system improvements for the benefit of our Arlington customers.

ADDENDUM

Recent Town Inquiries

Since the beginning of the year, we have received a number of written inquiries. These inquiries related to a small area that had low voltage complaint, 8 small sustained outages and 13 momentaries (blips).

Approximately 12 customers in the Apache Trail area experienced the low voltage. This was corrected by upgrading a pole-mounted transformer one replacing one damaged electric service. The voltage to the 12 homes is now adequate

The momentary outages were experienced in the Arlington Heights area. Brief outages, from 1 – 10 seconds, typically result in blinking electronics and computer difficulty. Lightning strikes on the electric system, animal contact and auto accidents that damage the electric infrastructure cause these momentary interruptions. We received inquiries for residence at Lowell Street, Appleton Street, Ashland Street, Evergreen Street, Florence Ave., James Street, Lennon Street, Pamela Drive, Pleasant Street, Ryder Street, Surry Street, Tanager Road, West Street, Westminster Ave.

The sustained outages were experienced in Aerial Street, Summer Street, Park Ave Ext. In an effort to immediately respond to the recent rash of momentary and sustained interruptions NSTAR has developed the following Action Plan to address the apparent causes of these service interruptions that are aggravating and inconvenient to our Arlington electric customers.

A circuit “walk-down” will begin immediately, to be completed in the forthcoming weeks. This will allow NSTAR to upgrade connectors, improve animal guard protection and add additional lightning protection. These actions will help reduce outages of all kinds to the customers in the Arlington Heights vicinity. Furthermore, NSTAR will begin additional tree trimming to increase clearances between tree limbs and the overhead conductors, further mitigating outages caused by downed limbs on conductors. (Please see Phase 4 above for additional planned work).

It is very important for our customers to understand that the electric system is designed to sense any interference with the wires or circuit and to automatically open and immediately reclose the circuit, up to three consecutive times, in an attempt to avoid extended outages that might be caused by squirrels or birds and/or tree limbs briefly encroaching on the wires. After the third attempt to reclose the circuit, the circuit breaker will trip indicating the circuit is faulted and a serviceman will need to respond to reset the breaker. While these brief outages are an aggravation, the alternative is an extended outage of 2 to 3 hours to have a troubleshooter isolate the faulted area and then reset a circuit breaker. NSTAR tree pruning clearances for electric lines are 12 feet on either side and 20 feet above the lines. Since the wires and the tree limbs both move independently this clearance standard is not unreasonable but it usually is unattainable. We typically negotiate with the community residents on what clearances we are actually able to obtain within tree-lined communities similar to Arlington – it is usually a delicate balance between electric line clearances (i.e., electric reliability) and tree aesthetics. Newer electronic equipment typically have battery back up to avoid having to reset clocks and VCRs.

Respectfully submitted to the Arlington Board of Selectmen, June 28, 2004, by:

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